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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,376	12/05/2005	Masamichi Morita	Q86778	6763

23373 7590 10/03/2008
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
HIGGINS, GERARD T	

ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
10/03/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/528,376	MORITA ET AL.	
	Examiner	Art Unit	
	GERARD T. HIGGINS	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 11-14* is/are pending in the application.

4a) Of the above claim(s) *7-9 and 11-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/16/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The response filed 07/29/2008 has been received. Currently claims 1-9 and 11-14 are pending, claims 7-9 and 11-14 are withdrawn, and claim 10 is cancelled.

Claim Objections

2. Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim still recites the limitation "or silicone," which has been removed from independent claim 1.

3. Claim 1 is objected to because of the following informalities: the parentheses surrounding various limitations (e.g. "having 1 to 22 carbon atoms") seems to suggest that these limitations are optional; please remove the parentheses where the limitations are not optional. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 1, applicants state that the "fluorine containing compound is at least one fluorine-containing compound...***and*** fluorine-containing organic phosphate ester compound." This renders the claim indefinite because it is unclear if one is using all of the compounds in the above list. Perhaps applicants meant the "fluorine containing compound is at least one fluorine-containing compound...***or*** fluorine-containing organic phosphate ester compound."

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

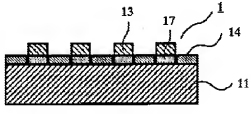
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida (JP 2002-023356), machine translation included.

With regard to claim 1, Ishida discloses a material useful for semiconductor devices, displays, LED's etc. [0002] and Figure 5. The substrate **11** is the same type of materials as used by applicants [0013], and there is an alternating line pattern [0031] comprised of a 1st (**14**) and 2nd (**17**) self-organization organic thin films [0017] and [0018], respectively. The 1st self-organization film is comprised of fluoro alkyl silanes

such as trifluoropropyl trimethoxysilane. This compound will form an organic silane polymer compound derived from a monomer which has a fluoroalkyl group having 5 or less carbon atoms such as in applicants' point (c) of claim 1. A conductive material is then formed above the 2nd self-organizing film by use of a plating method [0033]. The device is anisotropic because the characteristics of the surface will differ in the direction of the alternating line pattern; however, Ishida fails to teach that the trifluoropropyl trimethoxysilane is perfluorinated.

【図5】



It would have been obvious to one having ordinary skill in the art at the time the invention was made to perfluorinate the propyl trimethoxysilane compound of Ishida. The results of which would have been predictable to one having ordinary skill; specifically, one of ordinary skill would understand that a perfluorinated compound compared to the trifluoro compound would be more non-polar and more lipophilic. This is beneficial because it would more precisely allow the conductive material to go on the 2nd thin film.

With regard to claim 2, the Examiner deems that the surface free energy difference between the alternating line patterns on the device of Ishida intrinsically comprises the values claimed. The Examiner deems this to be so because Ishida

teaches at [0004] that it is known in the art to vary the functionality of the alternating lines to thereby change the surface characteristics of the alternating lines. Surface free energy is a "surface characteristic" as taught by Ishida; furthermore, since the materials of the alternating line pattern are the same as those claimed by applicants, they would intrinsically display the surface free energy difference claimed by applicants.

With regard to claim 3, Ishida teaches at [0031] that the width and pitch of the lines are 20 microns.

With regard to claim 4, Ishida teaches at [0015] that the self-organization layers of the present invention are excellent in forming "uniform films with a molecular level." A uniform film would necessarily have an unevenness of less than 10 nm, especially considering the organic films are on the order of 3 nm thick [0014].

With regard to claim 5, the Examiner deems that the device of Ishida would intrinsically comprise the testing conditions of applicants' claim 5. The Examiner has deems this to be so because the materials that comprise the alternating line pattern of Ishida are the same as those claimed by applicants.

With regard to claim 6, Ishida teaches at [0018] that the 2nd self-organizing material may have a thiol functional group on the surface thereof.

8. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida (JP 2002-023356), machine translation included, in view of either Ishida et al. (JP 2001-284289) or Furusawa et al. (JP 2001-284274).

With regard to claim 1, Ishida discloses a material useful for semiconductor devices, displays, LED's etc. [0002] and Figure 5. The substrate **11** is the same type of materials as used by applicants [0013], and there is an alternating line pattern [0031] comprised of a 1st (**14**) and 2nd (**17**) self-organization organic thin films [0017] and [0018], respectively. The 1st self-organization film is comprised of fluoro alkyl silanes such as trifluoropropyl trimethoxysilane. This compound will form an organic silane polymer compound derived from a monomer which has a fluoroalkyl group having 5 or less carbon atoms such as in applicants' point (c) of claim 1. A conductive material is then formed above the 2nd self-organizing film by use of a plating method [0033]. The device is anisotropic because the characteristics of the surface will differ in the direction of the alternating line pattern; however, Ishida fails to teach that the trifluoropropyl trimethoxysilane is perfluorinated.

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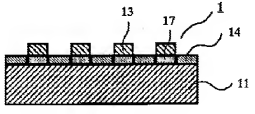

Ishida et al. '289 disclose at [0015] that these same kinds of semiconductor devices can have an alternating pattern formed with a siloxane that has an R group comprising ($CF(CF_3)_2$), which is a perfluorinated isopropyl group.

Furusawa et al. disclose at [0020] that these same kinds of semiconductor devices can have an alternating pattern formed with a siloxane that has an R group comprising ($CF(CF_3)_2$), which is a perfluorinated isopropyl group.

Since Ishida '356, Ishida et al. '289, and Furusawa et al. are drawn to semiconductor devices; it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the siloxane of either Ishida et al. '289 or Furusawa et al. as the 1st self-organizational film of Ishida '356. The results of which would have been predictable to one having ordinary skill; specifically, one of ordinary skill would understand that a perfluorinated compound compared to the trifluoro compound would be more non-polar and more lipophilic. This is beneficial because it would more precisely allow the conductive material to go on the 2nd thin film.

With regard to claim 2, the Examiner deems that the surface free energy difference between the alternating line patterns on the device of Ishida intrinsically comprises the values claimed. The Examiner deems this to be so because Ishida teaches at [0004] that it is known in the art to vary the functionality of the alternating lines to thereby change the surface characteristics of the alternating lines. Surface free energy is a "surface characteristic" as taught by Ishida; furthermore, since the materials of the alternating line pattern are the same as those claimed by applicants, they would inherently display the surface free energy difference claimed by applicants.

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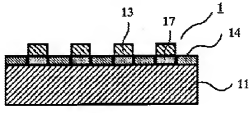

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Ishida also fails to teach the use of a layer of a semiconductor compound as the functional material.

Katz et al. teach using organic semiconductor materials as a functional material for fabricating circuitry (Abstract and [0022] to [0023]). These materials can be bound to fluorinated silane surfaces [0030] and [0031].

Since Ishida and Katz et al. are both drawn to patterning of substrates for circuit technology, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the organic semiconductor materials of Katz et al. as the functional material of Ishida. The results of which would have been entirely predictable to one having ordinary skill in the art of semiconductor manufacture. Specifically, one of ordinary skill would understand that the organic semiconductor material would bind to the 1st self-organizing material (fluoro alkyl silanes) instead of binding to the thiol or amino modified 2nd self-organizing material.

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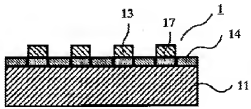

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Response to Arguments

11. Applicant's arguments filed 07/29/2008 have been fully considered but they are not persuasive.

Applicants' arguments are resting upon the fact that the changes made to claim 1 have sufficiently overcome the prior art of record.

The Examiner respectfully disagrees. Although the Examiner's main reference (Ishida '356) only teaches trifluoropropyl trimethoxysilane and not a perfluorinated compound as is now claimed in applicants' section (c) of claim 1; it still would have been obvious to one having ordinary skill in the art at the time the invention was made to

perfluorinate the propyl trimethoxysilane compound of Ishida. The results of which would have been predictable to one having ordinary skill; specifically, one of ordinary skill would understand that a perfluorinated compound compared to the trifluoro compound would be more non-polar and more lipophilic. This is beneficial because it would more precisely allow the conductive material to go on the 2nd thin film. Perfluorinated compound are ubiquitous and are known for making surfaces resistant/repulsive to chemicals. One of ordinary skill would know to apply this knowledge to the siloxanes of Ishida.

Even having said that, the Examiner has made a new rejection based on applicants' amendment using Ishida et al. '289 and Furusawa et al. These references teach that one may use siloxanes with a perfluorinated isopropyl 'R' group on a siloxane. This type of siloxane renders obvious applicants' point (c) in claim 1.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Examiner has provided machine translations of JP 2001-284289, JP 2001-284274, and JP 2002-079625.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERARD T. HIGGINS whose telephone number is (571)270-3467. The examiner can normally be reached on M-F 9:30am-7pm est. (1st Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gerard T Higgins, Ph.D.
Examiner
Art Unit 1794

/Gerard T Higgins, Ph.D./
Examiner, Art Unit 1794

/Callie E. Shosho/
Supervisory Patent Examiner, Art Unit 1794